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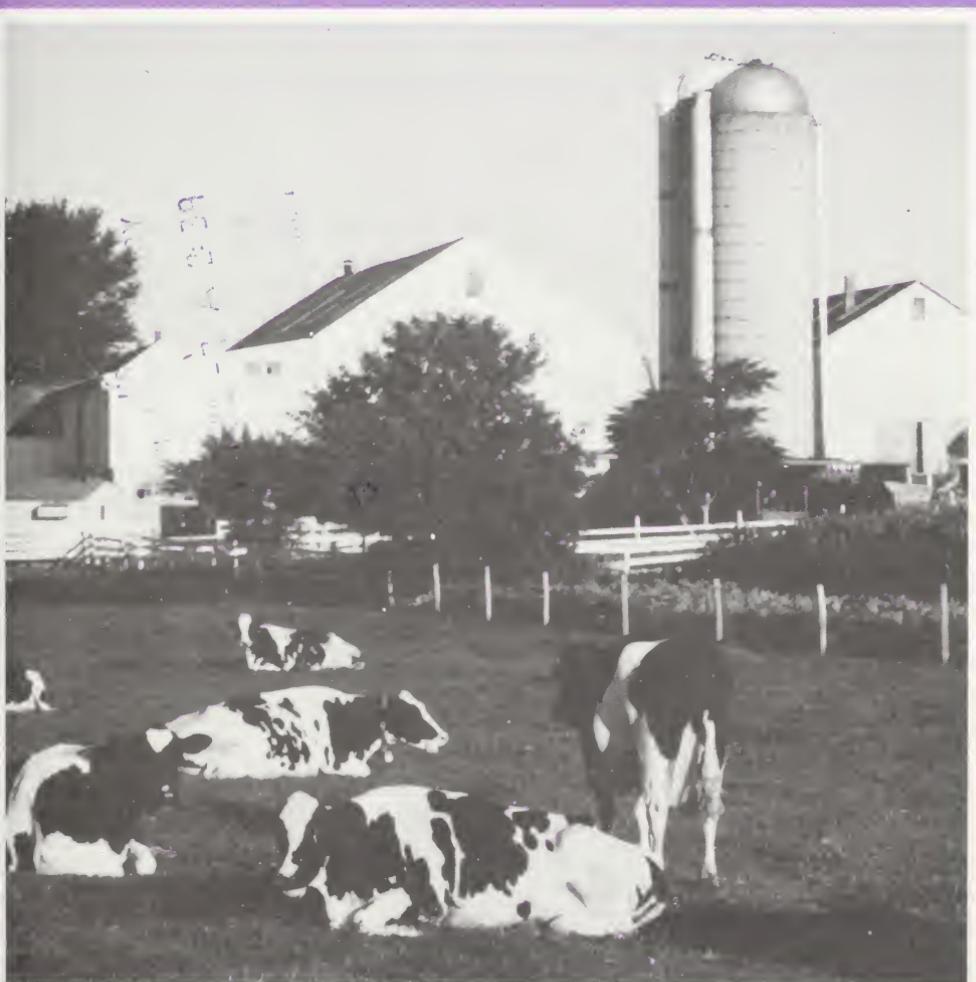
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Dairy Cooperatives



FARMER COOPERATIVES IN THE UNITED STATES
COOPERATIVE INFORMATION REPORT 1
SECTION 16

UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL BUSINESS AND COOPERATIVE DEVELOPMENT SERVICE



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Cooperative Information Report 1, Section 16
Revised October 1995

Two-hundred-pound drums of dehydrated cheese are ready for blending in a plant owned by Mid-America Dairymen, Inc., Springfield, MO.



Dairy Cooperatives



Size and Scope

In 1992, a total of 110,440 farmer-members marketed 118.9 billion pounds of milk through 265 dairy cooperatives. Six decades earlier, there were 9 times as many dairy cooperatives marketing one-fourth as much milk for 7 times as many farmer-members.

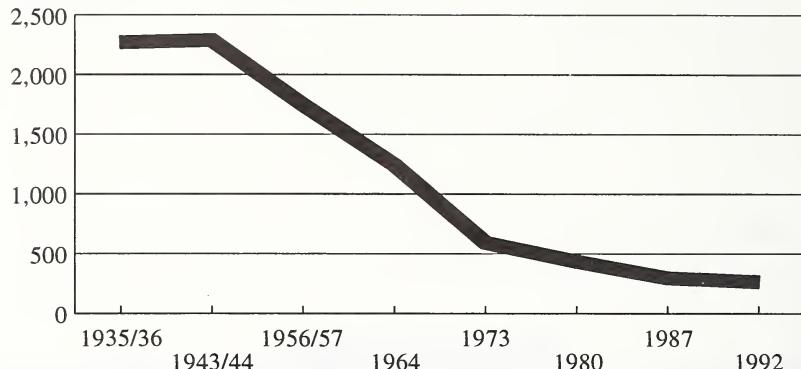
As efficiencies in production, manufacturing, processing and transporting milk led to fewer, but larger farms and processing/manufacturing plants, cooperatives adapted similarly. For instance, between 1987 and 1992, 31 dairy cooperatives disappeared. Yet, the remaining cooperatives marketed 16.8 billion pounds more milk than cooperatives marketed in 1987 and had 10,000 fewer members.

Dairy cooperatives hold a dominant position among agricultural marketing cooperatives. Over the years, dairy cooperatives have frequently generated more net business volume than any other type of agricultural marketing cooperative. As far back as 1936, dairy cooperatives generated one-third of the total business volume of all marketing cooperatives while grain cooperatives ranked second with 23 percent. In 1993, dairy cooperatives accounted for the highest share (33 percent) of the total business volume of all marketing cooperatives, followed by grain marketing cooperatives with 27 percent.

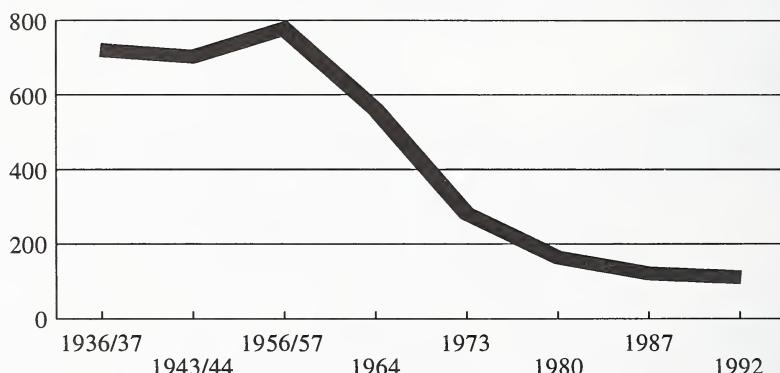
Compared with other types of cooperatives, the number of dairy cooperatives declined the most between 1936 and 1993. Their numbers fell by more than 2,000, or 89 percent. In contrast, the number of grain cooperatives fell 60 percent. Although livestock cooperative numbers dropped 90 percent to 106 cooperatives, the reduction of 934 was less than one-half of the decline in the number of

Figure 1—Between 1936 and 1992, the number of dairy cooperatives and the number of producers belonging to them fell, even though the volume of milk they marketed grew steadily.

Number of cooperatives



Number of members (thousands)



Billion pounds

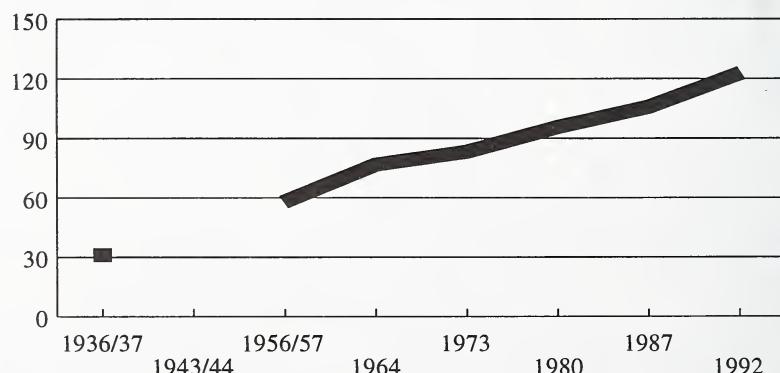


Figure 2—Dairy cooperatives have maintained a prominent position among marketing cooperatives, collectively generating a large portion of their total business volume.

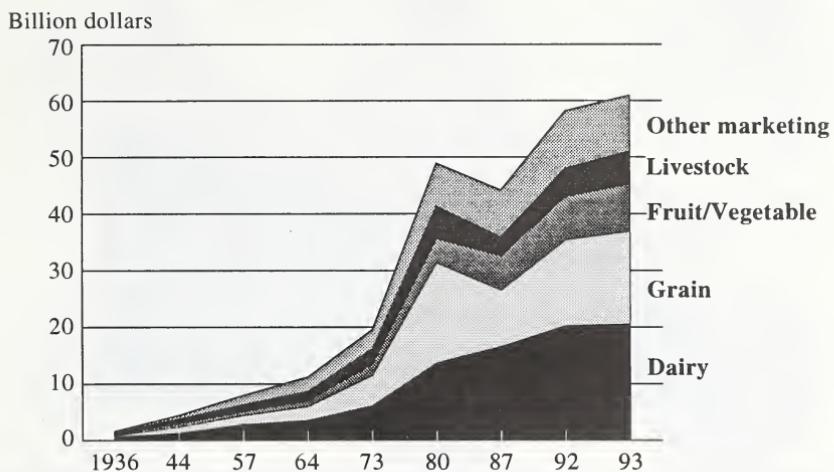


Figure 3—Dairy cooperative numbers have shrunk faster than other types of marketing cooperatives through merger and consolidation.

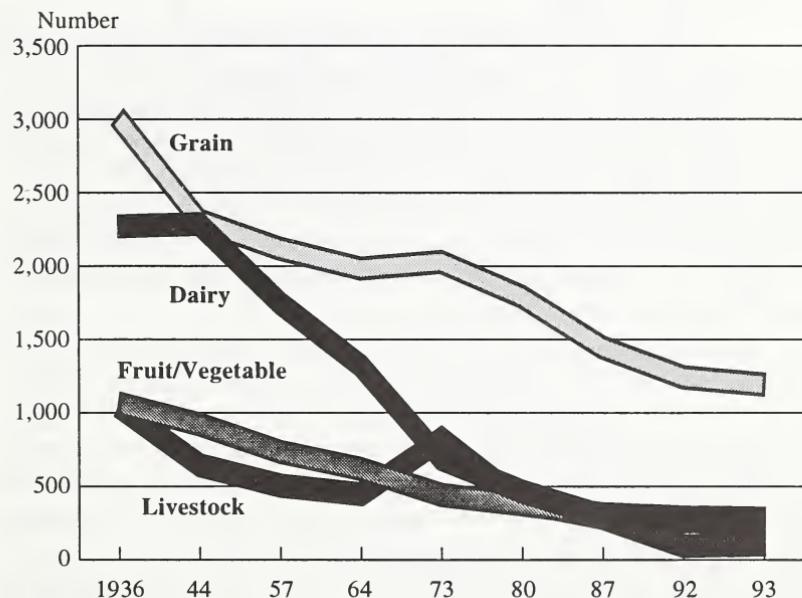
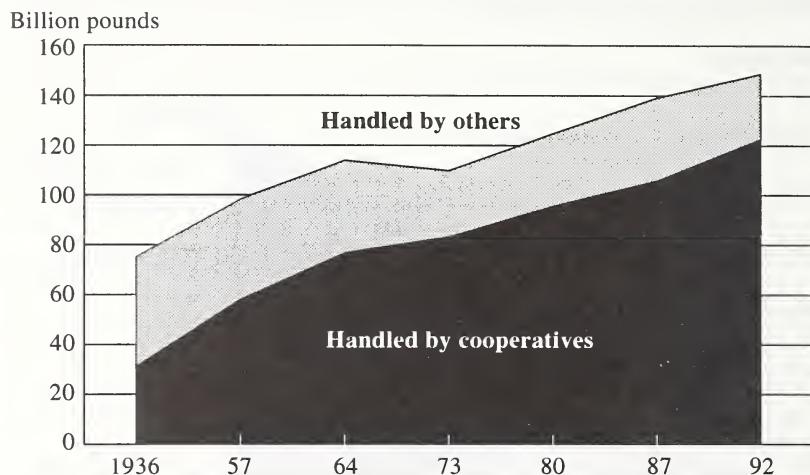


Figure 4—Cooperatives handled 82 percent of all milk sold in 1992, up from 48 percent in 1936.

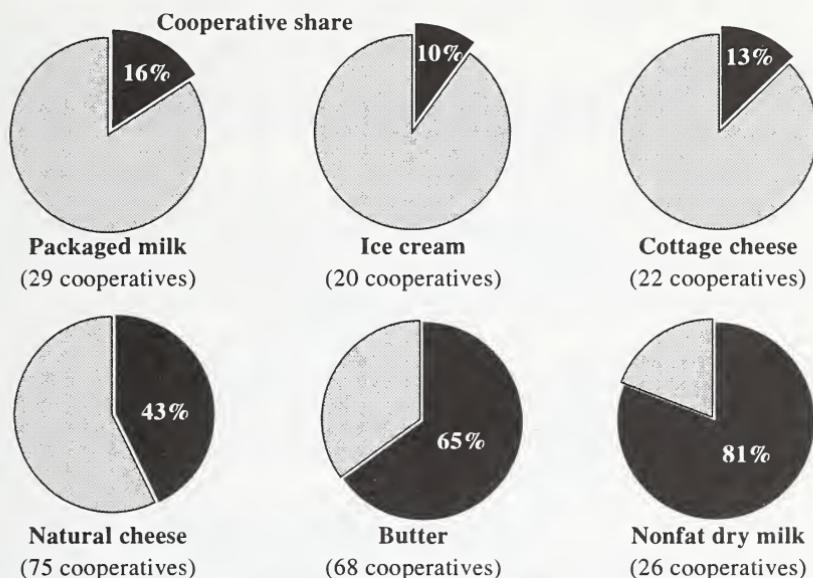


dairy cooperatives. This reduction in dairy cooperative numbers reflects a consolidation into fewer, but larger organizations that are in a better position to compete with large, concentrated food companies and milk handlers.

In 1936, dairy cooperatives marketed about 48 percent of the Nation's milk. By 1992, cooperatives handled more than four-fifths of the 148.8 billion pounds of milk delivered to plants and dealers in the U.S. While cooperatives' share of the Grade A milk sold hovers around 80 percent, their share of the declining volume of manufacturing grade milk grew from 55 percent in 1973 to 62 percent in 1992. In 1992, cooperatives sold 62 percent of their members' milk raw (up from 55 percent in 1987) while they processed or manufactured 38 percent (down from 45 percent in 1987).

Cooperatives play a significant role in the production and distribution of several major dairy products. In 1992, they distributed 81 percent of the nonfat dry milk manufactured in the U.S. However, this is smaller than the 91-percent market share cooperatives held in 1987. Cooperatives also were the principal handlers of butter. Their 65 percent market share in 1992, however, was down from 71 percent in 1987. Cooperatives also handled 43 percent of the natural cheese manufactured in the U.S. in 1992. (See the data tables at the back of this report.)

Figure 5—Co-ops played a dominant role in the distribution of a variety of dairy products in 1992, as they have for the past 50 years or so.



Origin and Development

Characteristics of Milk Production

To understand why cooperatives became and continue to be a choice marketing channel used by dairy farmers, the basic characteristics of milk production and marketing need to be considered.

The production of milk is a unique agricultural enterprise; consequently, the dairy industry has some distinct characteristics relative to other agricultural and nonagricultural industries. Milk is highly perishable, produced and "harvested" on a daily basis, and moved from farm to market at least every other day. Specialized equipment, supplies, and labor are required. Expansion of the milk supply is a long-term process. On average it takes a heifer 27 months from birth to enter the milking herd. Likewise, contraction of milk supply is relatively slow. Dairy farmers are impeded by large fixed investments in specialized facilities and, in some regions, lack of alternative farming opportunities.

The volume of milk produced varies seasonally and daily for biological reasons, but this variation is not coordinated with changes



Cooperatives manufactured 81 percent of the nonfat dry milk in the U.S. in 1992. Here, 100-pound bags of nonfat dry milk are stacked in Maryland and Virginia Milk Producers Cooperative Association's warehouse.

in demand. Storage to balance supplies with demand is feasible only after processing, except in the very short term. Conversion of milk from raw product to various intermediary and final products requires capital-intensive facilities and technologies that are subject to significant economies of scale.

While technology and organization of the production unit have changed drastically, the basic biology remains the same. Milk production is still continuous and subject to a biological lag. Changes in processing and marketing have also been significant, but the basic characteristics of milk flow persist.

Regulatory and Economic Environment

The Federal Dairy Price Support Program was started during World War II and became permanent in 1949. The program supports the farm milk price through Government purchases of all butter, American cheese, and nonfat dry milk that cannot be sold commercially at or above announced prices. Purchase prices are set at levels designed to enable manufacturers to pay farmers the announced support price for milk during surplus production periods. As a result, the Government's purchase prices for butter, American cheese, and nonfat dry milk serve as floor prices in wholesale markets.

By establishing minimum prices, Government support prices provide a safety net for producers. The support level has sometimes been adjusted to bolster dairy farmer income. Dairy farmers responded to the higher level of support by producing more milk, which led to substantial surpluses that ended up in large Government-owned stocks of butter, American cheese, and nonfat dry milk.

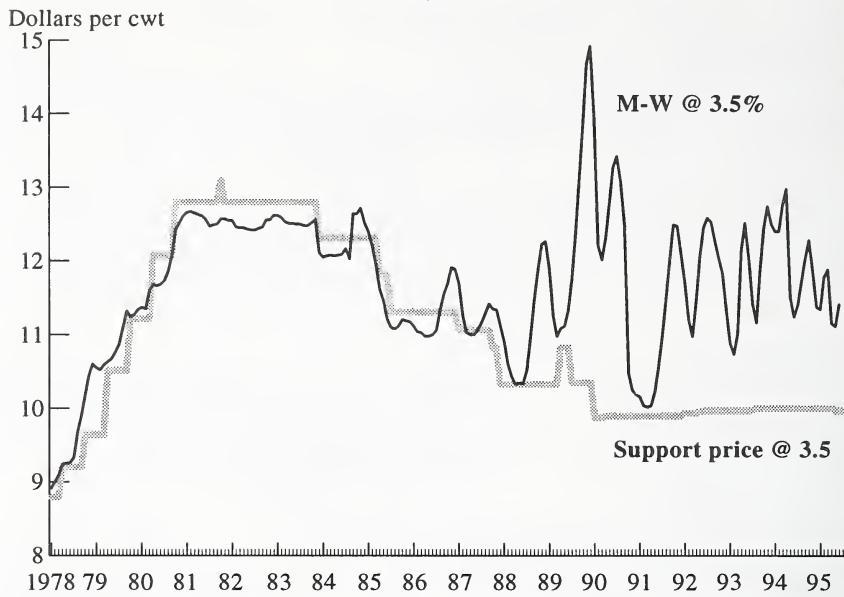
Beginning in late 1983, several reductions in the support price for milk were made to address the surplus problem. These and other dairy program changes, combined with market forces, increased dairy manufacturers' exposure to risk. Purchase prices for surplus products were lower and milk price movements became increasingly volatile and erratic as market forces were less restrained by the lower floor under prices.

Consequently, by the end of the 1980s and continuing into the 1990s, milk prices rose and fell sharply, departing wildly from the traditional pattern of manufacturing milk prices hovering around the support level. (Fig. 6 shows Government support purchase prices and the Minnesota-Wisconsin, or M-W, price—the price paid for more than one-half the manufacturing grade milk in the country, representing the competitive market price for milk.) Volatile prices for manufactured dairy products made inventory management more risky.

Federal Milk Marketing Orders

Congress first authorized Federal marketing orders in 1935 through a revision of the 1933 Agricultural Adjustment Act. The Agricultural Marketing Agreement Act of 1937 re-enacted the 1935 Act and became the foundation for the modern Federal Milk marketing order system. The major objectives of the program are to: establish and maintain orderly marketing conditions for agricultural commodities in interstate commerce; establish parity prices for farm-

Figure 6—Comparison of the Minnesota-Wisconsin (M-W) price and the milk support price, 1978 through 1995



Source: Dairy Market News and ASCS Commodity Fact Sheet: 1993-94 Dairy Price Support Program.

ers; protect the interest of the consumer; and avoid unreasonable fluctuations in supplies and prices.

Market orders set minimum prices processors must pay dairy farmers or their cooperatives for Grade A milk produced in markets where farmers have elected to sell their milk under a Federal milk marketing order. The two major provisions of these orders are: classified pricing of milk according to use, and pooling or combining all revenue from the sale of regulated milk where a single (blend) price is paid to producers. (Milk is classified according to its use—milk for fluid products is Class I; milk for soft products, such as yogurt or sour cream, is Class II; and milk for products such as butter, powder, or cheese is Class III). Marketing orders also benefit handlers by assuring equal raw product costs among handlers and steady, year-round milk supplies.

The 1985 Food Security Act amended the 1937 Act, setting the minimum Class I differentials for each of the 41 Federal orders then in effect. This was the first time that differentials had been set legislatively. (Class I differentials are specified amounts added to the base price for manufacturing grade milk to ensure adequate supplies of high-quality milk.) Under the 1937 law, they were set at the

discretion of the Secretary of Agriculture to represent the cost of transporting milk from surplus to deficit regions.

By a quirk of timing, California established a separate milk marketing order in 1935 which remains in effect today. In 1934, Federal courts ruled that the Federal milk marketing order program could not be enforced in California because milk markets were local with no interstate trade taking place. As a result, the California legislature passed the Young Act in June 1935 to establish minimum producer prices for fluid milk. Two months later, Congress amended the federal milk marketing order legislation to accommodate California's situation. However, California had no incentive to apply for Federal orders at this time since it had its own legislation on the books. Although a few other States operate State milk marketing orders, these parallel more closely the Federal orders than does the California pricing system.

Initial Organization

Dairy farmers pioneered the application of cooperative principles to marketing U.S. farm products. The formation of dairy cooperatives was stimulated by milk's perishable nature, year-round production, and farming's growing isolation from city markets. Economies available from jointly owned milk manufacturing plants provided financial incentive for cooperation. In addition, North European immigrant dairy farmers were familiar with cooperative traditions in their home countries.

Cooperative Marketing of Raw Fluid Milk

In the early years of the country, farms were already moving away from cities and into the hands of fewer people. Organized marketing of raw milk for fluid consumption began during the latter part of the 18th century in cities where families were unable to obtain milk from nearby producers. A system of "middle-men" between producers and consumers began to emerge in the 1800s. Fewer and fewer producers carried out all marketing functions. Milk price was determined by negotiation where both buyers and sellers were small and numerous. The major challenges of the day were milk quality and seasonality in prices—high in winter, low in spring.

During the first half of the 19th century, before rail transportation and mechanical refrigeration, it became increasingly difficult for large cities to obtain adequate milk supplies from country dairy farms. To meet the demands for milk in large cities, distilleries



Above—Farmers hauled their milk in cans to rail depots for transportation to city markets. Right—Milk was sampled as it was unloaded from the milk train.

often developed a milk production system within the city limits. Cows were generally housed in stables and fed distillery slop with a minimum amount of hay. The milk was of poor quality, partly because of abnormal feeding, poor care of cows in crowded, unsanitary stables, and partly because the milk was diluted with water at each sales level. Twice a day, carriers delivered milk dipped from a can and poured into the customer's container.

Fortunately, rapid construction of railroads in America during the middle and late 1800s permitted the movement of increased supplies of "fresh country" milk to the cities, gradually replacing the inferior distillery milk. Cooperative development in marketing milk



for fluid use centered in the large cities in the eastern part of the Nation and Chicago. As early as 1842, the Erie Railroad brought milk from Orange County, NY, to Jersey City, NJ, a distance of 80 miles. The Orange County Milk Association, with 20 shares of stock owned mostly by local dairy farmers, arranged these first shipments of "pure" country milk. This association initially followed cooperative principles, but over time it became a noncooperative company.

By the last quarter of the 19th century, the milk marketing system was steadily moving toward a structure where hundreds or thousands of dairy farmers sold to only a handful of large dealers. The milk dealers began to develop a bargaining edge over farmers primarily due to better market information. The development of cooperative bargaining by farmers with city milk dealers was sporadic, however. Rural isolation, the generally independent nature of most dairy farmers, and the formation of powerful milk dealers' organizations combined to suppress the growth of significant cooperatives at first.

Events in the New York milkshed characterized the forces that stimulated dairy farmers in many regions of the country to look at cooperatives to address emerging marketing problems. New York milk distributors formed a purchasing association in 1882, known as the New York Milk Exchange, to buy milk on commission for distributors and to fix prices paid to producers.

Since the exchange was organized by distributors, it became necessary for the producers to form an organization to represent them in price negotiations. However, the exchange refused to recognize the producers' association. In response, a "strike" or milk withholding action by farmers was called. After milk supplies were sufficiently tightened, the exchange agreed to price negotiations. Nevertheless, within 2 years the distributors had extended their milkshed outside the Orange County territory and essentially broke down any power exercised by the Orange County producers.

Subsequently, producers made several attempts to bring together all shippers to the New York City market into a central organization. It was to function as a marketing agency. These efforts either failed or were ignored by the distributors. Similar cooperative associations also had been developed in Boston, Chicago, Cleveland, Pittsburgh, and Baltimore. However, most were weak and ineffective as marketing organizations. Prior to 1916, cooperative fluid milk marketing on a large-scale had gained little permanent foothold. Nevertheless, these efforts familiarized dairy producers with cooperative action, laying a foundation upon which later associations were built.

The ensuing unfavorable economic situation and Government policies for food control during World War I contributed to the rise and development of the cooperative marketing of fluid milk. Milk prices in late 1916 and early 1917 had dropped significantly more than prices for other food products. Dairying became relatively unprofitable. Increasingly erratic and often chaotic pricing of fluid milk and the growing dealer practice of balancing fluctuating supply needs by refusing to accept some producers' milk contributed to the successful formation of large-scale cooperative bargaining organizations for raw whole milk. Farmers naturally turned to any existing cooperative marketing associations to represent them in getting higher prices.

Producers for the Chicago, New York, and Boston markets appear to have been among the earliest to take up the fight actively. Organized labor's accomplishments in securing higher wages served as an example of the benefits of organization. Milk producers were inspired to use the strike as a method of enforcing their demands.

Between 1916 and 1920, milk strikes took place in Boston, Chicago, Cincinnati, New York, Pittsburgh, and St. Louis. Although the strikes were fairly successful in obtaining the demands of the producers, their effect was only temporary. They did, however, focus public attention on the question of city milk supplies and on the necessity for dairy producers to receive a fair return on milk production. Strikes served to bring producers together and to strengthen the cooperative associations of farmers in fluid-milk supply areas. The successful outcome of the milk strikes, however, was largely due to minimal consumer resistance. Rising prices for other commodities helped to curtail consumer objection to the smaller milk price increases.

In addition, the Federal Food Administration, which operated from 1917 to 1919, preferred to deal with groups rather than individuals. Cooperative associations were the only representatives of milk producers. The administration wished to keep all parties satisfied and advised distributors to accommodate producers' price demands. They complied rather than oppose the administration.

Thus, the action of the administration, in many cases, helped to give producer cooperatives a foothold strong enough to ensure their lasting establishment. Local groups began to organize. Old associations were revived. Interest in marketing fluid milk was particularly strong around large cities. Active membership in many associations increased rapidly between 1916 and 1920.

For example, the Dairymen's League Cooperative in Syracuse,

NY, was formed around 1910 to gain greater farmer control of milk pricing. By 1916, the costs of production had risen so much more than the prices of milk that the members of the Dairymen's League were aroused to action. The league's executive committee established a price for Oct. 1, 1916, but distributors refused to pay it. The league responded with a 2-week strike that lasted until the dealers conceded to pay the league price. As a result, membership grew from 15,000 to 25,000 in a few months.

When the Federal Food Administration was disbanded in 1919, friction between producers and distributors developed again. An 18-day strike ensued. Again, the distributors gave in to the farmers. By 1919, membership had climbed to 75,000.

The end of World War I sharply reduced the demand from European markets for milk products, leaving a large surplus of milk with no means of handling it. Thus, the league decided it needed facilities for handling the surplus. By 1921, the Dairymen's League had become the Dairymen's League Cooperative Association and was very active in buying country milk plants to increase its ability to directly handle members' milk. Membership fell, however, as the cost of membership grew due to plant ownership. (This association continues to operate as Dairylea Cooperative, Inc. Today it operates as a bargaining association with investment in plant facilities—operated by others—to ensure a market for members' milk.)

In a number of instances around the time of World War I, the right of producers to join in negotiating price and terms of sale with distributors in a particular market was questioned. On several occasions, leaders of an association were criminally prosecuted for violating antitrust laws—attempting to increase and fix the price of milk. Even though they were found not guilty, the prosecutions were a disturbing element in the progress of the fluid-milk cooperative associations. Fortunately, the Capper-Volstead Act of 1922 granted cooperatives limited exemption from Federal antitrust acts and the problem abated.

Fluid Milk Processing/Distribution

Some bargaining associations began distributing fluid milk to preserve a market for members when a customer-dealer wished to sell its plant. In other cases, cooperative creameries and raw milk sales cooperatives added milk bottling to their operations and expanded into fluid milk distribution. Other fluid milk cooperatives were organized specifically to package and distribute milk, believing a

bottling cooperative could return a higher net price than other dealers. Health regulations requiring milk to be pasteurized encouraged producer-distributors in an area to unite and cooperatively operate a plant. In other instances, producers shipping milk to a dealer who wished to sell his plant often formed a cooperative to acquire and operate the plant, thus increasing their market security and earnings.

However, the number of cooperatives that specialize in fluid milk packaging and distribution was relatively small. Only five were active in 1915. Unfavorable economic conditions led to rapid growth during two 5-year periods of marked activity, 1919-23 and 1932-36. During the first period, milk prices lagged behind those of other agricultural products. But a shift to other lines of production was not attractive to fluid milk producers located near a city market. In the second period, a wide gap developed between farm and retail prices for milk.

Packaged fluid milk and related products are highly perishable, so plant operations had to be geared to product sales rather than milk production. Bottling cooperatives faced supply balancing problems in matching milk supplies to plant needs. Consequently, in some of the early bottling cooperatives, members delivered only the amount of milk the cooperative needed and disposed of their share of the reserve milk individually. This generally required additional low-volume, high-cost manufacturing facilities or arrangements with other manufacturing plants for handling the unneeded milk supplies.

Early bottling cooperatives accepted new members only when they needed milk in an attempt to balance milk receipts with fluid use. They generally were opposed to marketwide pooling provisions because pooling spread the low price returns for reserve milk among all producers.

Cooperative Manufacturing

Dairy cooperatives that primarily used members' milk and cream in manufacturing dairy products were the first to organize. One of the first attempts at associated or cooperative dairying dates back to 1810. Lewis M. Norton of Goshen, CT, began manufacturing pineapple cheese from his own herd of 50 cows. In 1844, he built a cheese factory and obtained curd from his neighbors to increase his production.

The first U.S. cheese factory that served as a model and incentive for developing the cooperative system was established in 1851 in Rome, NY. Credit is generally given to Jesse Williams of Oneida



The first cooperative creameries and cheese factories were small—limited to the volume that could be accumulated by horse-drawn wagons.

County, NY. Williams was an experienced and skillful cheesemaker. Most of the cheese produced at the time was poor quality, so his product brought premium prices. He proposed collecting milk daily from several neighboring farms to be made into cheese by a skilled operator at a central location. Williams was also willing to explain his manufacturing methods to others.

From this time on, cheese production became more scientific. Similar methods were soon applied to buttermaking. Thus, from Williams' idea sprang the association cheese factory system, butter factories, and other kinds of milk plants.

Most cooperative creameries and cheese factories began as local organizations handling relatively small volumes of milk and/or cream. Volume was limited to the amount of milk or cream that could be assembled in cans and delivered in horsedrawn wagons once or even twice a day. Because dairy farms were relatively small and remotely located, cooperative creameries were generally organized in areas where a large portion of the milk produced could best be mar-



The early commercial dairymen left cans on raised platforms beside the road for pick-up and transportation to plants like the one below, operated by Golden Guernsey Dairy Cooperatives, Milwaukee, WI.



keted for butter production—avoiding the high cost of transporting whole milk to distant city markets.

Cooperatives sprang up spontaneously and independently as farmers sought solutions to their common problems. Groups of farmers separately created these early cooperative creameries and cheese factories in different parts of the U.S. Their principles and practices, developed by trial and error, include many that are still accepted today, such as “user-supported” and “user-benefitted.” Milk from several farms was pooled in one location (either by hauling milk in cans or by taking cows to the factory to be milked) and made into cheese or butter. By agreement, a portion of the products made or of the net proceeds was returned to patrons in proportion to the amount of milk furnished.

A number of these factories bought milk from both members and nonmembers. Some were partially financed with equity investments of nonproducers. Proprietors or companies occasionally bought milk or cream from producers at mutually agreed prices and assumed all expenses, risk, and returns of the business. Profits were distributed only to stockholders on the basis of shares owned.

Use of cheese factories began to expand by 1870. From New York, they spread to Pennsylvania and Ohio and then to other States, east and west. While some cooperative creameries (butter churning plants) existed in most States, they were concentrated in the Midwest—particularly Minnesota, Iowa, and Wisconsin.

One such cooperative, Glencoe Butter and Cheese Company, Glencoe, MN, was founded in 1894 with a capital stock of \$10,000, divided into \$25 shares. Two early concerns of this cooperative's directors were establishing several area skimming stations and storing a sufficient supply of ice. This cooperative continues in existence today as Glencoe Butter and Produce Association.

Similarly, Danish Creamery Association was formed around this time on the west coast. This cooperative, headquartered in Fresno, CA, has continued under the same name for the past 100 years.

The number of creameries grew slowly until mechanical cream separators were introduced about 1890. By 1900, there were around 6,000 creameries and almost 3,000 cheese factories. Cooperatives operated about one-third of them. The introduction of motorized transportation permitted cream assembly from a wider territory. The number of cooperative creameries remained relatively constant until the late 1930s. In 1936, there were 538 cooperative cheese factories and 1,355 cooperative creameries.



*Main plant and headquarters of Land O' Lakes creamery, circa 1950.
Note rail siding next to plant.*

The condensed milk industry began at the same time as the factory system, but cooperatives did not initially play an important part. By the 1920s, however, some cooperatives had acquired milk evaporating facilities as an alternative to making butter or cheese. By the 1930s, some creameries were installing milk drying facilities to provide a market for buttermilk and skim milk.

Cooperatives flourished and waned through the late 19th and early 20th centuries with changes in economic conditions, dairy plant technology, and local farming practices. By 1925, cooperative dairy associations were reported in all but 6 of the 48 states. They provided markets for the Nation's growing numbers of dairy farms, mostly located in isolated rural areas lacking today's modern road transportation network. Generally, these predecessors to our present day dairy cooperatives served as proving grounds where dairy farmers learned to organize and operate their own cooperative business enterprises.

Adaptation to Changing Markets

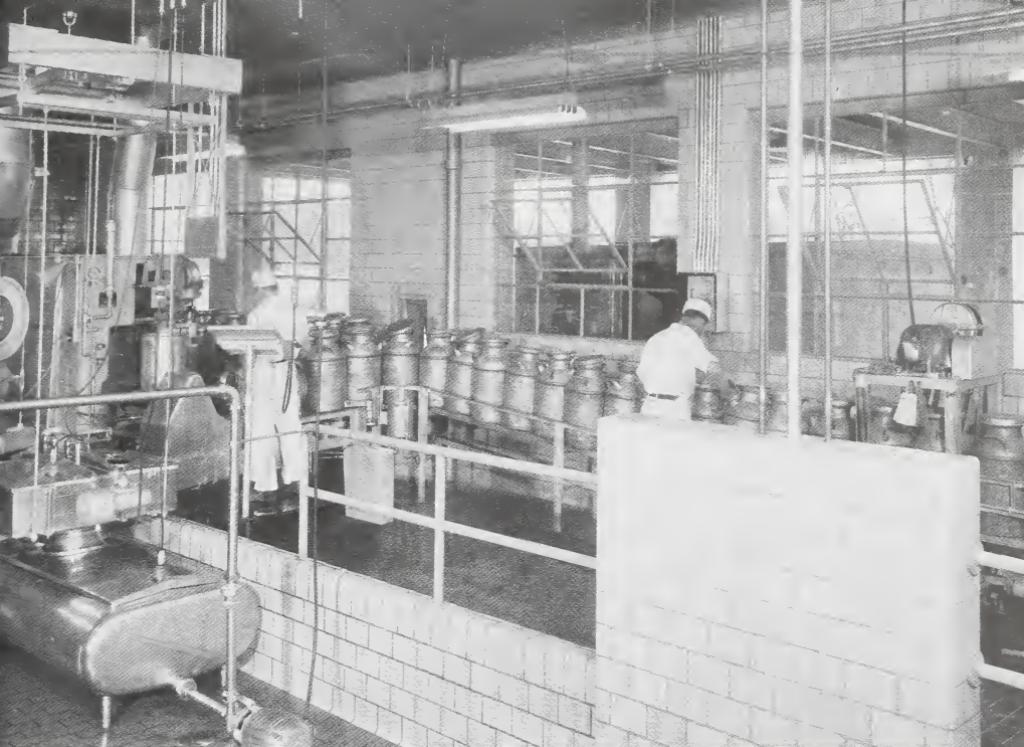
As milk began to be sold more commonly through large dealers, milk pricing became more complicated due to the production process and supply and demand characteristics of milk. Early bargaining associations quickly found that increases in milk prices led to problems in disposing of surplus milk (i.e., milk not needed for fluid use).

In response, classified pricing that recognized the difference in value of milk in various uses was first introduced in 1886 by a producer association. Thus, cooperatives pioneered pricing milk to dealers on a classified basis according to use and used audit procedures to assure proper payment by handlers. Numerous markets adopted classified pricing plans in the 1920s and early 1930s, and in every case, a cooperative negotiated its adoption with the larger dealers. Dairy cooperatives also developed milk pooling systems for more equitable distribution to members of returns for milk used in different products and plans for dealing with the seasonality of milk deliveries.

Continuing instability in fluid milk marketing during the 1930s led to the adoption of State and Federal milk marketing orders. Implementation of marketing orders generally required producer approval. However, cooperatives were permitted to bloc vote for their membership. This led to the organization of many new cooperatives, some formed as a first step in obtaining a milk marketing order and others to represent producer views different from those of the members of existing cooperatives.

Cooperatives' role in the bulk fluid milk market was largely confined to bargaining for price and setting terms of trade. Most of the physical handling of the milk was done by others—either the processors, or in the case of hauling, independent truckers under contract with cooperatives. Some country plants and receiving stations were operated by cooperatives, but most were owned by the processors. Each processor received all the milk from farmers on specified assembly routes. The route volume was to match the amount of milk the processor needed. The processor was then responsible for all the milk and for the disposition of that part of his receipts which was not used for fluid products.

A few raw-milk-sales cooperatives in the larger markets acquired milk manufacturing facilities as early as the 1920s to assure members a market for their milk. But most provided only limited marketing services. Then, from the late 1930s to 1950s, many coun-



Receiving milk at the plant in the days of can milk at Michigan Milk Producers' Association, Detroit, MI.

try plant operations changed from private ownership to cooperatives.

Large-scale plants significantly lowered per-unit operating costs. Milk condensing and drying facilities made the nonfat portion of milk marketable, prompting farmers to switch from shipping farm-separated cream to whole milk. World War II brought an increased need for manufactured dairy products, particularly dry milk products. Through lend-lease funds, the Federal Government financed the construction of several cooperative milk drying plants. By 1944, more than 200 cooperative plants were manufacturing nonfat dry milk.

This dramatic shift from marketing cream to marketing whole milk resulted in a rapid decline in the number of creameries. Even though some small cooperative creameries added facilities for receiving whole milk and shipping skim milk, they continued to face the long-term problem of paying competitive prices. Efficient, large-scale plants manufacturing butter, powder and/or other whole milk products could pay higher prices than the small creameries could. Unable to compete, some small creameries became milk receiving and ship-



A major technological advance in milk handling occurred in the 1960s when on-farm bulk milk holding tanks came into use. Here, the hauler takes a milk sample from one of Maple Lawn Farm's bulk tanks.

ping organizations while others either disappeared or converted to other operations. For similar reasons, the number of small cooperatives making cheese also declined greatly.

By 1957, the number of cooperative creameries had declined to about 500. By 1980, they had either all disappeared or shifted to raw whole milk receiving and shipping operations. Many that vanished had joined with others in forming large dairy manufacturing cooperatives. Likewise, the number of cheesemaking cooperatives further declined.

Small milk manufacturing cooperatives recognized the need to join with neighboring cooperatives in developing a grading and packaging system to gain a stronger voice in the marketplace. These federated sales cooperatives attempted to assure markets by providing city buyers a continuing supply of consistently high-quality products. These organizations often operated central packaging and dis-

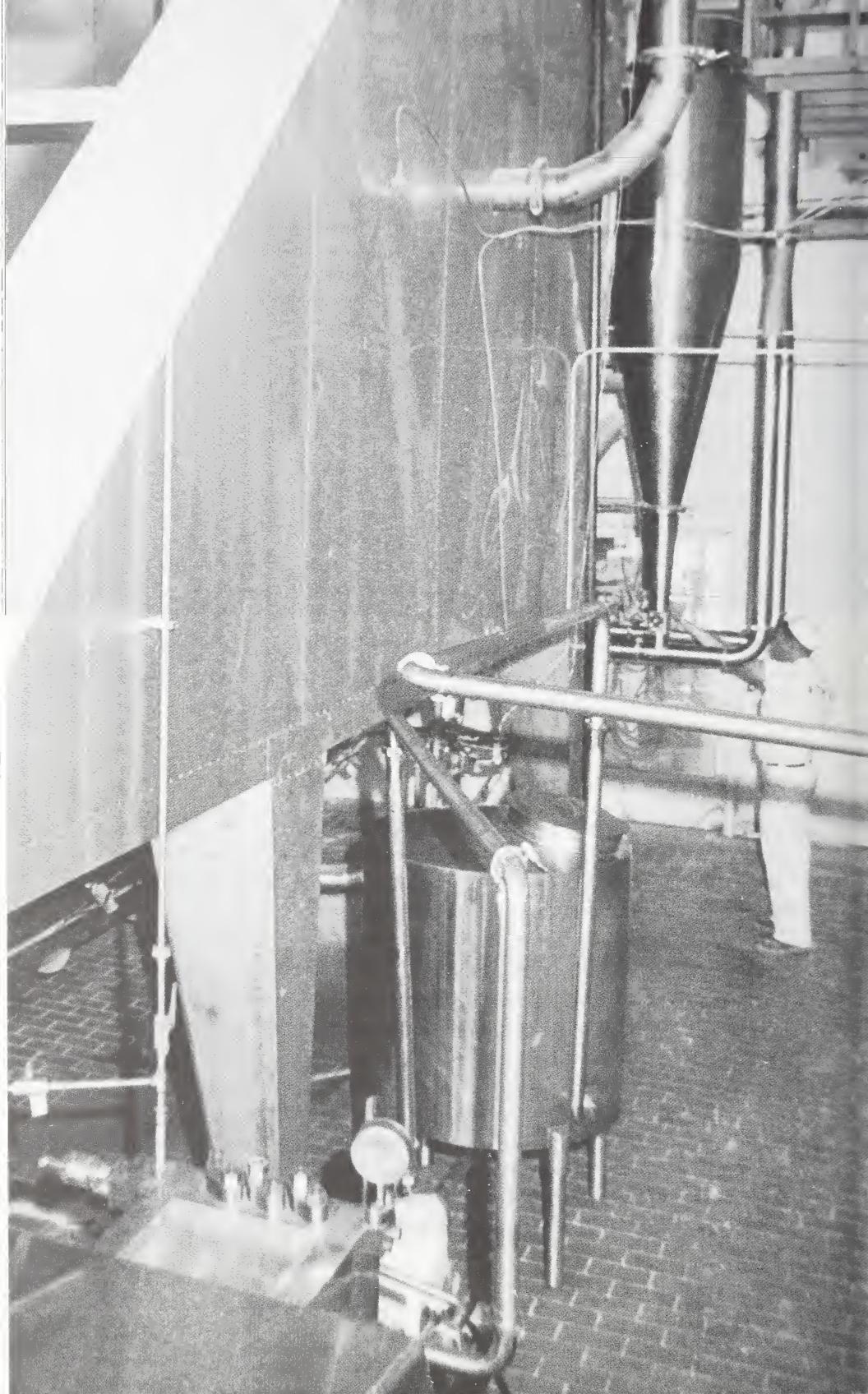


Bulk milk trucks pick up milk from a number of members' farms and transport it to plants. These refrigerated tanker trucks allow large volumes of milk to be transported long distances.

tributing plants. Initially, they marketed mostly butter and cheese, adding other products as member cooperatives expanded and diversified. Considerable field service work was done with member cooperatives to obtain delivery of high-quality products.

Expanding the Cooperative Role

Bulk tank handling was first introduced in California in the late 1930s on a few farms, each with several hundred cows. Widespread use of farm bulk tanks by Grade A milk producers began in the late 1950s. During the 1960s, producers of manufacturing grade milk were also installing farm bulk tanks. Widespread use of bulk tanks on the farm drastically changed the marketing of raw milk. Milk could be picked up by tank trucks and hauled directly from the farm (perhaps with a pause at a pumpover station for transfer to a larger tank truck) to the city from substantial distances. This widened



fluid milk market supply areas. It became evident that better management of the movement of milk could bring significant reductions in costs and that economies of scale were substantial. These factors prompted cooperatives to take over much more of the milk hauling.

Milk delivery requirements for qualifying producers to participate in Federal milk order pricing pools also permitted manufacturing cooperatives to participate in fluid milk markets. Thus, non-grade A milk producers, who installed farm bulk tanks, were often encouraged to convert their operations to qualify for grade A milk production and ship to fluid milk markets.

Conversion to bulk handling and processing of milk for fluid use at the plant was completed in the 1960s. Many manufacturing milk plants were also converted in the 1970s. These and other technological changes required not only substantial capital investment but additional milk volume for low-cost operations. As a result, competition between plants for milk increased.

The increased mobility of milk accelerated the trend not only toward large commercial dairy farms but also toward large-scale plant operations and improved plant technology. This precipitated a decline in numbers of plants and cooperatives, even though the volume of milk handled grew. Cooperatives soon had to deal with increased mobility of raw and packaged milk and growing specialization by fluid milk buyers.

Additionally, most cooperatives that had strictly focused on manufacturing dairy products from members' milk became associated with fluid milk markets as an outlet for milk from members shipping grade A milk. Many small manufacturing cooperatives merged with large ones. The resulting multi-plant cooperatives gave large-scale plants the flexibility needed to handle reserve fluid milk supplies and to manufacture the products for which there was greater market demand.

Many fluid milk bottling plants were unable to compete due to the increased capital requirements. They disappeared—many through merger or acquisition by other dairy cooperatives. The size of fluid milk plants grew during the 1960s. Small plants closed, middle-sized plants added volume, and larger plants were built. The very large plants (often owned by supermarket chains or proprietary

This huge dry milk powder machine dwarfs an employee of the North Texas Producers Association's Sulphur Springs plant (1966).



Fluid milk processors required high-volume and up-to-date equipment to remain competitive.

Many milk processing plants have become highly computerized, capital intensive operations.

firms) were specialized fluid milk plants with little or no capacity to handle daily or seasonal surpluses. They were planned to use a procurement system operated by a large, full-service cooperative. In some cases, local cooperatives were not large enough to provide the volume needed by such a plant. This stimulated mergers among cooperatives to achieve such a size.

Processors negotiated full supply agreements with cooperatives because of the uncertainty in coordinating a fluctuating supply to meet a variable demand and the high cost of balancing milk supplies with demand. Under a full supply contract, the cooperative agrees to provide the exact milk volume the processor needs. The cooperative takes on the balancing function, typically by using the excess milk in other products (usually manufactured products such as butter and powder).

There are substantial economies of size in this balancing





function. Cooperatives carry it out at lower cost than if each processor did it independently. Furthermore, the larger the volume under the control of one agency, the more the random variations tend to offset one another, both within supply and demand and between the two. Thus, dairy cooperatives have assumed the functions of supplying fluid milk markets, routing the movement of milk, and balancing supply with demand. In this way, cooperatives have increased efficiency in milk marketing and strengthened their position in the marketplace.

A full supply arrangement does not adjust supply or eliminate fluctuations, but it reduces the expense of managing supplies and the uncertainty in dealing with market imbalances. However, most cooperatives have no provisions for controlling the volume of their members' production, complicating the balancing task.

In the mid-1960s, cooperatives became more involved in negotiating (setting) prices and in processing and marketing milk. A wave of mergers and consolidations reduced the number of individual dairy cooperatives by more than one-half. The remaining cooperatives were regional in scope, with membership areas covering a much wider geographic range. The restructured organizations were large centralized cooperatives supplying raw milk to fluid milk handlers over multi-market areas tailored to plant needs.

Associated Milk Producers, Inc. (AMPI) was one of the regional cooperatives formed during this period. Farmer members of almost 100 cooperatives voted to merge in 1969, creating the largest milk marketing cooperative.

In restructuring, manufacturing facilities were added or expanded, as required, to handle reserve milk supplies not needed for fluid use. By becoming major suppliers for one or more metropolitan markets, cooperatives strengthened their marketing position and their members' market security. In the 1960s, some of the larger raw milk sales cooperatives began to unite in federated regional bargaining associations, pioneering regional pricing of milk. With a tightening of milk supplies in the late 1960s, they established price premiums over the Federal milk market minimum prices for fluid milk (over-order prices) in Federal milk market orders extending from the Great Lakes to the Gulf of Mexico and Mexican border.

Door-to-door delivery in the 1950s. A routeman collects from a housewife for his deliveries.



Home delivery faded out when supermarket chains were able to offer milk at lower prices.



Bargaining through regional federations initially proved successful, but difficulties developed. The mere logistics of obtaining approval for a pricing plan acceptable to member cooperatives were often burdensome and lengthy. When disagreements developed, problems in obtaining member acceptance were greatly magnified. At times, disagreements caused member cooperatives to withdraw and pursue an independent course.

By 1980, large regional cooperatives not only provided fluid milk handlers with most of their milk, but also produced a large proportion of the manufactured dairy products made by cooperatives. Grade A milk production reached 85 percent of total milk production in 1982. But, the volume used in fluid milk products continued to decline, prompting greater milk manufacturing activities by cooperatives that had primarily shipped milk to fluid milk handlers. In some cases, these cooperatives used more milk in manufacturing operations than they sold as raw milk. The operation of large manufacturing plants began to evolve from a purely balancing "least loss" function into important profit centers that have become a major function of most cooperatives operating manufacturing/processing facilities.

Dairy cooperatives have adapted to marketing problems faced by their producer-members (such as obtaining a fair price for milk and getting milk to market) by becoming larger and integrating into manufacturing and processing. Hence, cooperatives continue to fulfill their fundamental role of guaranteeing members a market for their milk.

Dairy Cooperatives Today

Categorizing Dairy Cooperatives

Over the years, dairy cooperatives have been organized in a variety of markets for diverse purposes, often taking differing approaches to adapt to changing market conditions and member needs. As a result, the associations differ markedly in size, facilities, and general marketing arrangements. Despite this lack of uniformity, it is convenient for descriptive purposes to classify them according to the functions they perform.

Dairy cooperatives today fall into two general types—*bargaining-only* and *manufacturing/processing* cooperatives. Bargaining-only cooperatives negotiate prices and terms of trade for their members' milk and do not manufacture or process members'

milk. Manufacturing/processing cooperatives may bargain for prices, but they also market some or all of the members' milk through their own processing or manufacturing facilities.

Bargaining-Only Cooperatives

These cooperatives focus solely on negotiating milk prices with buyers, rarely take title to members' milk, and do not own processing or manufacturing facilities. In 1992, 68 percent of the dairy cooperatives in the U.S. could be described as bargaining-only. However, they tend to be relatively small in terms of the milk volume handled.

The larger bargaining-only cooperatives generally employ a general manager and a staff that includes laboratory technicians to check on the test weight and quality of milk, field representatives to build membership and provide assistance in improving milk quality, and personnel to prepare and distribute market information and represent the association in legislative and regulatory affairs (such as Federal and State milk market order hearings).

Federal milk marketing orders require cooperatives to perform certain marketing services if their members are to be exempted from a marketing service deduction. The deduction generally ranges from 3 to 7 cents per hundredweight of milk marketed. The amount is determined by the market administrator's costs for providing specified services to nonmember producers. Small bargaining-only cooperatives often affiliate with larger cooperatives to qualify for this exemption. Some small bargaining-only cooperatives have close working relations with a single handler receiving their milk. In this case, these cooperatives are often viewed as "captive cooperatives" because a single handler is their only feasible market outlet.

Typically, producers are responsible for hauling milk from farm to plants even though deliveries by members of bargaining-only cooperatives are often made at the direction of the handler(s). The handlers generally arrange for manufacturing plants to handle milk not needed by their fluid milk plants.

Bargaining-only cooperatives require minimal capital because they do not own processing or manufacturing facilities. However, some may own milk receiving stations to better handle member milk. As such, the price members receive for their milk has minimal deductions from the handler price reflecting the bargaining-only cooperatives' minimal marketing expenses. Bargaining-only cooperatives often finance their marketing service programs through deductions

about equal to the milk market order's deductions.

Members of bargaining-only cooperatives potentially face the greatest marketing risk during periods of excessive surplus. When milk is plentiful, these cooperatives may have to sell some of their supply at reduced ("distressed") prices and/or incur increased costs in moving members' milk long distances to find a market. Lack of manufacturing facilities to manufacture or process milk into storable products may force bargaining-only cooperatives to be pricetakers when milk supplies are abundant.

In the typical case where the cooperative does not take title to the milk, the risk rests squarely on the producers. Under opposite circumstances, when milk supplies are in balance or short of demand, the bargaining-only cooperatives may have the upper-hand in negotiating milk prices. Members then benefit the most, enjoying higher milk prices while unburdened by the expense of owning and operating under-used manufacturing facilities.

Manufacturing/Processing Cooperatives

Roughly one-third of the dairy cooperatives (in 1992) operate one or more plants and therefore fall into the manufacturing/processing category. These cooperatives vary widely in operations and organizational structure. In addition, a given cooperative's activities change over time as it alters operations to adapt to changing market demands. In addition to negotiating prices for milk sold raw (just as bargaining-only cooperatives do), manufacturing/processing cooperatives own facilities for manufacturing milk into storable dairy products and/or fluid (beverage) milk. A small number, however, do not bargain at all, but market all their members' milk through their own plants. About 38 percent of the milk marketed by cooperatives in 1992 was processed or manufactured in plants operated by cooperatives.

On the other end of the spectrum, a few own (or have partial or joint ownership) but do not operate plants, preferring to lease them to proprietary firms who contract to purchase milk from the cooperative and operate the plant(s).

The proportion of member milk made into selected products, and the intensity with which these products are marketed depends upon the market position taken on by the manufacturing/processing cooperative. Four stages or categories of the variations and changing functions of manufacturing/processing cooperatives can be identified:

- [1] Cooperatives that bargain for milk prices and manufacture the surplus into commodity (undifferentiated) products for supply balancing only. Typically, these cooperatives have older plants and are gradually evolving out of this stage either by repositioning themselves or through merger with another cooperative(s).
- [2] Cooperatives that have a system of well-run, large-scale modern plants and manufacture commodity products as the main line of business. Most of the dairy cooperatives on the West coast and in similar growth areas fall in this category.
- [3] Cooperatives that engage in processing and marketing differentiated products as the mainline of business. The few bottling cooperatives that exist and some smaller-scale manufacturing cooperatives that make a specialized product or brand would be part of this group.
- [4] The majority of the manufacturing/processing cooperatives “do it all”—bargain for raw milk prices, process and market differentiated and/or commodity products, and balance the residual.

Below—From the outset, cooperatives used trademarks and brands to build customer loyalty and name recognition (circa 1947).

Right—To better market members' milk, cooperatives such as Land O'Lakes work to develop new and improved products to satisfy consumers' changing tastes and preferences.



Owning manufacturing facilities improves a cooperative's ability to balance member milk supply with customer demand. These cooperatives are better positioned to guarantee their customers a full supply of raw milk and to remove the burden of disposing of unneeded milk. Manufacturing/processing cooperatives' abilities to handle peak milk volumes enable them to avoid purchasing milk at premium prices (from nonmembers or other milk handlers) to fulfill supply commitments when supplies tighten.

Butter and nonfat dry milk ("butter-powder") plants traditionally are used for balancing milk supplies. In some cases, cheese manufacturing plants perform the balancing role. Because the major function of these facilities is to handle surplus milk, these plants may be operated at low capacity and may even stand idle at times. The products manufactured for balancing purposes are typically known as bulk products or commodities and include such storable products as



butter, powdered milk, or bulk cheese. These are standard or generic products commanding little or no price differences between manufacturers because there is little to distinguish the product from one manufacturer or another.

The Government safety net has been lowered since the early 1980s, increasing the pressure on dairy cooperatives to become more market-oriented. Many manufacturing cooperatives have evolved beyond the purely balancing role, and are manufacturing higher-value differentiated or value-added products. These products have been further processed, distinctively packaged and/or formulated, or aggressively marketed—giving them unique characteristics that set them apart from products made by other manufacturers. Often, the point of difference commands a higher price for the products. Examples include packaged (bottled) fluid milk, ice cream and ice cream novelties, branded products, specialty cheeses, custom formulations of various products or milk components (such as milk or whey powder and lactose), as well as a variety of soft products (yogurt, sour cream, cottage cheese, etc.). Members share in the margins (or losses) generated by the marketing of these value-added dairy products.

Manufacturing/processing cooperatives commit significant resources to marketing their products to obtain premium prices. This maximizes returns to their dairy farmer members. Some manufacturing/processing cooperatives contract to process or manufacture branded products for other firms. Some make their own products and supply other firms.

Only a few cooperatives are highly successful in fluid milk bottling as their primary business. Most bottling cooperatives merged with larger cooperatives in response to the continuing rise in capital requirements and risks in a very competitive industry. Processing cooperatives often market packaged milk through smaller food chains and independent stores to compete with the large food chains that have integrated into fluid milk marketing.

Large, centralized manufacturing cooperatives serving multi-market areas developed during the late 1960s and early 1970s and improved overall marketing efficiency. These cooperatives took steps to better organize milk assembly routes, moving milk to plants on a least-cost basis. They also located and operated manufacturing plants to best handle the marketing area's reserve milk supply, integrated marketing of manufacturing and reserve grade A milk, and developed centralized producer payroll, bookkeeping activities, and field service programs.

Disposition of grade A milk in excess of fluid uses is a marketing burden, especially in markets with relatively high fluid demand. Wide daily, weekly, and monthly fluctuations in milk volume tend to lead to erratic through-put and under-utilized manufacturing plant capacity. This results in a high per-unit operating cost, particularly during the market's peak-day fluid needs. Per-unit costs decrease when plants are operated at full capacity because fixed costs are spread out over a larger volume. Thus, costs per unit increase as the volume manufactured slips below plant capacity. Manufacturing/processing cooperatives handling this reserve grade A milk attempt to recoup losses (due to the increased costs) by negotiating over-order prices or by charging handlers marketing service fees on sales of milk for fluid uses.

At times, privately owned fluid milk processing firms aggravate the reserve milk handling problem by purchasing part of their supply from independent producers and/or bargaining-only cooperatives. Then, it falls to the manufacturing/processing cooperatives to balance fluctuating supply needs. These buying practices increase the cooperatives' reserve manufacturing plants' per-unit costs (which must be carried by members). Unaffiliated producers, however, avoid all or at least part of these costs.

Regulatory agencies establish minimum prices to be paid by a handler of first receipt. Service charges added to the minimum prices by manufacturing cooperatives are not part of the regulatory system. The ability of manufacturing cooperatives to obtain these service charges can be undermined by independent producers and/or competing bargaining-only cooperatives that manage to avoid marketing service costs. As counter measures, manufacturing/processing cooperatives attempt to contract with customer-handlers to supply their total milk requirements or a set portion of their fluid supply needs.

Furthermore, the costs associated with developing, manufacturing/processing, and marketing differentiated products often require a higher capital commitment from members. Because of the additional marketing costs, transmission of milk price is not as direct. These cooperatives often "reblend" earnings before paying members for their milk. Thus, the milk price paid by the cooperative may reflect earnings (or losses) in addition to handler milk price less deductions for expenses.

Marketing risk faced by manufacturing/processing cooperatives contrasts with the risk faced by bargaining-only cooperatives.

Members of manufacturing/processing cooperatives receive the most benefits when milk supplies are plentiful, enabling plants to be run at full capacity. Furthermore, when marketwide milk supplies are abundant, manufacturing/processing cooperatives may be able to purchase distressed milk at lower prices, returning marketing profits to members.

Conversely, when milk supplies are in balance or short of demand, members of manufacturing/processing cooperatives may be relatively disadvantaged. Under these circumstances, these cooperatives may have to divert milk from manufacturing plants to meet commitments to customers. As a result, their plants are run less efficiently and members must carry the cost of maintaining idle or under-used manufacturing facilities. In addition, members of manufacturing/processing cooperatives must bear the burden of "free riders" (where proprietary firms or bargaining-only cooperatives avoid sharing in the cost of disposing of unneeded milk). However, increased margins from added-value products help to mitigate the impact of these losses for some cooperatives.

The volatility of milk prices since the late 1980s has made managing inventories of manufactured dairy products more precarious. Lower Government purchase prices have meant tighter profit margins in the manufacture of commodity products. However, manufacturing/processing cooperatives making value-added products are less tied to commodity prices (and therefore the level of support prices) and have greater opportunity to generate profits.

Consequently, more cooperatives have turned to manufacturing value-added products while some have opted to sell their plants, becoming bargaining-only cooperatives. In recent years, many manufacturing cooperatives initiated or renewed efforts to market their products internationally. Most dairy cooperatives (whether reluctantly or with foresight) continually alter operations to accommodate changing market and member demands.

Finally, it must be stressed that although many dairy cooperatives have become large, multi-faceted businesses and increasingly active in markets worldwide, most remain true to their cooperative principles—user-owned, user-controlled and user-benefitted. Earnings generated by these large, successful cooperatives are returned

While many are large and multifaceted, dairy cooperatives are producer-owned, producer-used, and producer-benefitted.



back to dairy farmers, representing significant economic activity in rural America.

Cooperation Among Cooperatives

Dairy cooperatives work together in a variety of ways to serve their members. Where membership areas overlap, some cooperatives agree to pick up and/or receive each other's members' milk to more efficiently move milk. This is known as "milk swapping" or "milk trading." In cases where one cooperative's membership may have thinned out significantly, or where a pocket of members has become isolated due to a plant closure, it is often more economical to allow a neighboring cooperative to pick up the milk and forge a reciprocal deal in another area where the handling logistics are reversed.

Dairy cooperatives also form joint ventures and partnerships to market members' milk. For example, cooperatives may jointly own a receiving station or a processing plant. Another form of cooperation is through the formation of federations or marketing agencies-in-common (MACs). These are formed for a variety of reasons—to market byproducts (viewed as peripheral to the main business focus of the cooperatives), to expand their customer base through diversified products lines and/or increased volume, and to capture savings from collective marketing efforts by acting as the sales agent for a group of manufacturing/processing and/or bargaining-balancing cooperatives.

Other MACs have been organized to spread out the costs of establishing consumer-recognizable brand names for differentiated products. A recent trend among dairy cooperatives has been formation of information sharing associations to exchange inventory and market data for specific products (see box).

As early as the 1900s, cooperatives formed federated marketing organizations to improve their marketing position. In 1909, nine cooperatives in Tillamook County, OR, all using the same salesmen, organized the Tillamook County Creamery Association to improve their product quality and coordinate marketing and other matters of mutual interest. In 1911, a group of California cooperative creameries organized Challenge Cream and Butter Association as the sole agency for marketing their butter and other products. Later, the association's membership was expanded to include cooperatives in a number of Western States and at one time had more than 30 cooperative organizations as members.

However, over time, member cooperatives grew larger and

Examples of Dairy Marketing Agencies-In-Common

Central Milk Producers Cooperative

A federation of 14 dairy cooperatives that supply about 95 percent of the Class I milk in the Chicago Federal milk marketing order. It sets prices on Class I and II milk. All orders for milk go through CMPC, and the federation determines the most efficient strategy to move the milk.

Mid-Atlantic Cooperative Milk Marketing Agency

A federation of 3 large cooperatives that represent 85 to 95 percent of the milk marketed in the Middle Atlantic milk marketing area. It negotiates over-order premiums for Class I milk.

Challenge Cream and butter Association

A federation of 2 cooperatives in California for marketing bulk fluid milk and dairy products.

Dairy Marketing Cooperative Federation

A federation formed in 1992 of 9 cooperatives that share marketing, production and inventory information on nonfat dry milk products.

Dairy Marketing Information Association

An association formed in 1993 of 9 or more cooperatives reaching from coast to coast to share marketing information for whey products and lactose on a weekly basis.

Western Cooperatives Milk Marketing Association

Formed in 1992 to share marketing information weekly on butter and powder, it also takes various market actions to enhance returns to member cooperatives and their milk producer owners.

Dairy-West Marketing, Inc.

Formed in 1993 to market all cheese produced by the two member cooperatives. After manufacturing, the agency assumes ownership of the cheese and packages it at a facility leased from one of the member cooperatives.

became better positioned to individually take on the marketing function. Thus, Challenge now functions as the marketing arm of just two cooperatives—one of which, Danish Creamery Association, Fresno, CA, is the oldest continually operating dairy cooperative in the U.S., having been founded in 1895. In a similar case, Valley Lea Dairies in Indiana was a federation formed to market the products of its member cooperatives. It, however, did not survive after members outgrew the need for the organization.

In 1921, a group of cooperative creameries formed Minnesota Cooperative Creamery Association to produce and market high-quality butter. In 1926, its name was changed to Land O'Lakes, Inc. Today, it has marketing agreements with cooperatives across the country to market its branded butter. Other major federated sales cooperatives were established in the 1920s, such as Illinois Producers Creameries, Darigold in Washington, State Brand Creameries in Iowa, and several in Wisconsin. Darigold became the marketing arm of the producer cooperative, Darigold Farms, Inc.

Finally, some MACs were formed to better negotiate price premiums in Federal milk marketing orders. These federations or regional cooperatives coordinate the activities of their member cooperatives in establishing a scale of regional and interregional service charges for milk above Federal order minimums, provide a forum for adjusting sales policies, and coordinate raw milk shipments to lower trucking costs. These federations also unify and coordinate presentations made in Federal order hearings, which make adjustments in response to changes in market conditions. Examples included the Regional Common Marketing Agency (RCMA) in New York and New England; Great Lakes Southern, operating from Michigan to Florida; and Central Milk Producers Cooperative (CMPC) in the Wisconsin–Chicago area. Of these, CMPC is still effective today.

Financing Dairy Cooperatives

Cooperatives differ from other types of business in that the users are also the owners who establish operating policies and must provide most of the operating capital. This equity represents capital the cooperatives obtained from members without assuming a legal obligation to redeem at a stated time. Dairy cooperatives also use debt capital to finance operations. Debt capital, however, is obtained largely from nonowners and the cooperative incurs legal liability to return it as agreed.

Many of the early cooperatives, particularly those with plant



Modern dairy operations are monitored and controlled by computer.



facilities, were organized with capital stock. Each member purchased a share of common stock that conveyed voting privileges. Preferred stock (with a dividend rate reflecting reasonable returns for capital) was primarily sold to members. On the other hand, many of the cooperatives that began as bargaining-only associations (or pure raw milk sales cooperatives), with little need for capital investment in facilities, organized without capital stock. Their initial equity capital came from the sales of membership certificates or membership fees.

Dairy cooperatives mostly rely on retained margins from operations to meet on-going capital needs. Efficient plant operations generally allow dairy cooperatives to pay producers a competitive price for milk and earn a reasonable margin from operations. Bargaining-only cooperatives typically establish marketing service fees that provide income greater than costs, generating small operating margins. All dairy cooperatives return net margins to members based on the volume of milk marketed. These payments are called patronage refunds. Partial retention of margins is an important way that members invest and cooperatives raise capital. Revolving, or paying the oldest retained margins first, is a method often used to keep the cooperative financed, owned, and controlled by current member-users. Members must include the retained margins allocated or distributed to them in their taxable incomes.

As pointed out previously, the technological developments that began in the 1950s greatly enlarged the capital needs of dairy cooperatives, particularly those of manufacturing/processing cooperatives. The additional capital needed to finance the growth of dairy cooperatives has serious implications for both creditors and farmer-members. Creditors limit their risk by requiring members to provide a significant portion of the capital. Thus, much of the capital needed by dairy cooperatives must come from members.

Another factor influencing dairy cooperatives' ability to meet capital needs was a 1962 change in tax code requiring cooperatives to distribute at least 20 percent of their qualified patronage refunds in cash. This IRS mandate assured cooperative members had sufficient income to pay related tax obligations in the year earnings were allocated.

These changes prompted dairy cooperatives to pay more attention to basic elements of finance. It became imperative that cooperatives demonstrate earnings from operations through efficient operations and value-added marketing. In addition, some cooperatives looked for new capital plans and operating arrangements to meet their capital needs.

Some cooperatives adopted an automatic deduction from members' milk payments, termed "per-unit capital retains," as a means of providing additional working capital. In 1976, 39 dairy cooperatives, or 8 percent of all cooperatives, used a capital retain, generating \$35 million. By 1987, 42 cooperatives—17 percent of all dairy cooperatives—used a capital retain to generate \$65 million in operating capital.

A few dairy cooperatives use base capital plans where each member invests a fixed amount based on past milk production. The member's capital base does not change from year to year unless the cooperative's total capital requirements or the member's milk production changes significantly.

An increasing number of dairy cooperatives retain a portion of their income as unallocated reserves to serve as a permanent contingency or cushion for the cooperative's capital needs. Unallocated reserves are usually derived from margins on non-member business on which taxes are paid. (Unallocated equity is not assigned or designated to specific member accounts and generally would only be paid to members if the cooperative were to be dissolved.)

Other avenues taken by some cooperatives to broaden their capital base include merger with other cooperatives, joint ventures, partnerships, and lease arrangements, sometimes with investor-owned or private firms.

Today, dairy cooperatives continue to be financed primarily by revolving funds obtained from retained margins and by per-unit capital retains, or a combination of methods. Members supply much of the capital needed to fulfill income and market security objectives. When the cooperative accumulates sufficient capital to finance facilities and operations, the board of directors must decide whether to return or repay part of the equity capital to members.

In 1993, dairy cooperatives had about \$4.5 billion in total assets. Equity capital represented 38 percent of total assets, down from 46 percent in 1970. However, average equity each member has invested in their cooperative increased almost ten-fold between 1970 and 1993—from about \$1,400 per member to more than \$14,000.

Debt capital amounted to about one-fifth of total assets in 1970, 1976, and 1987. A total of 103 dairy cooperatives (42 percent of all dairy cooperatives) reported borrowing \$706 million in 1987. Just under three-fourths was borrowed from banks—62 percent from the banks for cooperatives and 12 percent from commercial banks. Other types of liabilities (which include amounts due for members'

milk and other accounts payable) made up about 40 percent of total assets in 1976 and 1987.

Facing the Future

Dairy cooperatives will continue to perform a vital role in marketing members' milk. In fact, the ongoing changes in the dairy industry have intensified, rather than diminished, the importance of dairy cooperatives. However, dairy cooperatives must persist in responding to members' needs and adapting to changing market conditions. How well dairy cooperatives succeed in serving their member-owners into the 21st century will depend on the attitudes and responsiveness of members, elected directors, and the skills of hired management.

Several factors profoundly impact the dairy industry and, accordingly, dairy cooperatives:

- 1) Regional shifts in comparative advantages of milk production has contributed to an exodus of producers from the traditional milk producing regions. These shifts, accompanied by the general decline in number of dairy farms, results in a significantly diminished milk supply and excess plant capacity in areas outside the West Coast and Southwest. Cooperatives will need to work together to reduce plant capacity in some regions, perhaps jointly operating facilities, while minimizing potential losses to member-producers in the event of asset writeoffs. Conversely, the burden of handling the increasing volume of milk in the West and Southwest will continue to fall largely on cooperatives.
- 2) Many nations, including the U.S., have approved the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) which initiates trade reforms that begin in 1995 and extend to 2000 and beyond. As a result, the U.S. dairy industry will lose border protection enjoyed under Section 22 import quotas and face reductions in export subsidies employed under the USDA's Dairy Export Incentive Program (DEIP). Additional trade agreements such as the Canadian Free Trade Agreement (CFTA) and the North American Free Trade Agreement (NAFTA) also present opportunities and challenges for the dairy industry. Consequently, farmers, dairy cooperatives, dairy processors, legislators and others concerned with economic prospects for the U.S. dairy industry are seeking ways to expand exports of U.S. dairy products.

- 3) The continued growth and integration of food companies, accompanied by the lowered Government milk price support and competition in the international marketplace, are compelling change in cooperatives. Large national retailers and processors (and international firms) look for milk suppliers with large volume and/or the ability to meet product specifications. Large milk buyers increasingly want long-term contracts for entire lines of dairy products. Only large firms or cooperatives with national reach will be able to satisfy these demands. As a result, cooperatives may need to grow larger—perhaps through mergers or marketing agencies-in-common. In fact, several cooperative mergers took place in 1994 and 1995.
- 4) Some milk manufacturers have decided they'd be better off focusing resources on manufacturing and marketing—leaving the burden of milk procurement to some other entity. Arrangements where a proprietary firm contracts with a cooperative for milk supplies, rather than dealing directly with producers itself, may become more prevalent.
- 5) The fast pace of technological advances puts added demands on cooperatives. They must formulate equitable strategies for dealing with the consequences of new technologies—whether a sharply increased supply of milk and/or lack of consumer acceptance of milk produced with new technology. Cooperatives must be able to balance the market and regulatory impacts of these technologies with the desires of producer-members.
- 6) As the size of dairy farms diverge—some milking hundreds, even thousands of cows, while others remain small with 50 or 60 cows—and as the capital requirement of market-oriented, value-added marketing operations intensifies, contentious equity issues arise. Traditionally, cooperatives have treated all members equally, but with today's divergent farm structure and economies of scale in milk marketing, "equal" treatment of members isn't necessarily "equitable" for all members. And, as cooperatives operate in multiple markets, balancing the needs of members in different areas with overall operational needs becomes complex.

Other trends also affect the operations of both dairy farmers' and their manufacturing cooperatives' operations. These include heightened concerns about the environment; consumers' declining demand for butterfat and the related issue of component pricing; increased volatility of milk prices; use of futures market to offer



Dairy processing/manufacturing cooperatives accommodate environmental concerns. For example, Maryland and Virginia Milk Producers Cooperative Association's milk drying plant installed its own waste water treatment system.

fixed milk price contracts to members; and, declining public extension help in production, management, and marketing. Such trends and marketing issues will continue to challenge cooperatives and members to change the way they do business.

Industry Organizations

The first association of dairy manufacturers was formed in 1864. About 40 prominent dairy manufacturers in central New York called together a convention of dairymen representing a variety of factories. From this meeting, the New York State Cheese Manufacturers' Association was organized. It later became the American Dairymen's Association. Several other State associations of dairymen were formed around this time.

Today, dairy cooperatives and their members belong to specialized organizations concerned with legislation, advertising, sales

promotion, merchandising, marketing, public relations, product research, and obtaining dairy supplies. Here are some of the major ones.

National Milk Producers Federation

The National Milk Producers Federation (NMPF), the oldest of the national cooperative organizations, was founded in December 1916. Members include the major dairy cooperatives in the U.S., except those headquartered in California. NMPF is the principal national representative for dairy producers and the milk marketing cooperatives they own and operate. It represents dairy farmers on a broader range of issues than other dairy organizations.

NMPF's work is directed primarily toward legislative efforts in five major areas— price supports, milk marketing orders, cooperative structure, international dairy trade, and product integrity. NMPF builds and participates in coalitions in areas that affect its members, including international trade, reacting to new technologies, animal nutrition, milk safety and quality assurance, environmental issues, animal disease control, and consumer attitudes and trends. NMPF also works within its membership, other industry groups, and the Government to mold policies favoring dairy farmers, cooperatives, and consumers, as economic conditions, technology, and consumers' interests change.

NMPF is governed by a board of directors and an executive committee selected from the board. Member cooperatives fund NMPF directly and establish its dairy policies. They are the only national statement developed exclusively by dairy farmers through their cooperatives. Once policies are established, NMPF advances them legislatively and administratively at the national level. NMPF serves as a liaison between Congress, Government agencies, and member cooperatives.

National Council of Farmer Cooperatives

Created in 1929 and renamed the "National Council of Farmer Cooperatives (NCFC)" in 1940, the council promotes the interests of farmer cooperatives. It represents nearly 100 major farmer marketing and supply cooperatives, the banks of the Cooperative Farm Credit System, and 31 state councils of cooperatives. Currently, 11 milk marketing cooperatives are members. NCFC members, in turn, represent nearly 4,300 local cooperatives with a combined membership of nearly 2 million individual farmers.

American Dairy Products Institute

The American Dairy Products Institute was established in 1986 by a merger of the American Dry Milk Institute and the Whey Products Institute. The Evaporated Milk Association joined in 1987. It promotes increased acceptance and use of processed dairy products, represents its members on matters relating to Government agencies and legislative bodies, supports technical and marketing research, and assembles and disseminates statistics and other information about processed dairy products.

International Dairy Foods Association

The International Dairy Foods Association (IDFA) provides governmental relations, regulatory affairs, marketing, public relations, training, general management, meetings and seminars to processors, manufacturers, marketers and distributors of dairy products, some of which are cooperatives. While the IDFA was formed in 1990, its three constituent members, the National Cheese Institute, the Milk Industry Foundation, and the International Ice Cream Association, were each founded prior to 1930. IDFA provides a vehicle for addressing common concerns of dairy processors and manufacturers and allows the various segments of the industry to conduct jointly-sponsored programs.

National Cheese Institute

The National Cheese Institute (NCI) is the national trade association for manufacturers and distributors of all types of cheese and cheese products. Founded in 1927, it now has more than 140 member companies, including dairy manufacturing cooperatives, and represents 85 percent of the \$18 billion U.S. cheese industry. In 1993, the membership and activities of the U.S. Cheese Makers Association and American Producers of Italian Type Cheese Association merged with NCI.

Milk Industry Foundation

Founded in 1908, the Milk Industry Foundation (MIF), serves companies that process and distribute fluid milk, yogurt, cottage cheese, sour cream, soft cheeses, eggnog, cream, dairy dressings and dips, as well as bottled water, juices and juice drinks. With more than 200 member companies and cooperatives operating more than 400 plants, it represents about 80 percent of the \$28 billion U.S. fluid milk and fluid milk products industry.

International Association of Ice Cream Manufacturers

The International Association of Ice Cream Manufacturers (IICM) is the trade association for manufacturers and distributors of ice cream and other frozen dessert products. Organized in 1905, it has over 175 member companies who represent 85 percent of the \$10 billion U.S. ice cream and related frozen dessert industry.

Alliance of Western Milk Producers

As California dairy producers diverged dramatically in size and in policy interests from those in other parts of the country, they felt a need for their own organization. The Alliance of Western Milk Producers was formed in 1990 to represent them. Membership consists of 8 dairy cooperatives. It is involved in State and national issues. The association was instrumental in forming the Western Cooperative Milk Marketing Association.

Dairy Management, Inc.

Dairy Management, Incorporated (DMI), is a joint venture of the National Dairy Promotion and Research Board (NDB) and the United Dairy Industry Association (UDIA). The 20-member DMI board of directors has equal representation from the NDB and UDIA boards. The staffs and resources of these two separate dairy farmer-funded promotion organizations have been consolidated in DMI to conduct an integrated marketing and promotion program for U.S.-produced dairy products on behalf of America's dairy farmers.

Its major goal is to increase consumption of dairy products. Key priorities (in 1995's 5-year plan) include promoting fluid milk, cheese, butter, non-traditional uses for milkfat, exporting and maintaining a positive dairy marketing environment for dairy products.

United Dairy Industry Association

In 1970, the United Dairy Industry Association (UDIA) was formed by the American Dairy Association (ADA), the National Dairy Council (NDC), and Dairy Research, Inc. (DRINC) to increase the sales of U.S. milk and dairy products. A house of delegates governs the organization. These delegates are apportioned according to each organization's investment in UDIA's total promotion program.

American Dairy Association. ADA, now an operating arm of UDIA, was organized in 1940 by a group of dairymen and handlers.

Dairy farmers now fund ADA through the UDIA umbrella organization. ADA uses local and national consumer advertising through print, radio, and TV media and instore promotion to promote and advertise generic dairy products. ADA offers advice to dairy department and supermarket managers on ways to handle and sell dairy products.

National Dairy Council. NDC was organized more than 70 years ago to combat serious spread of hoof-and-mouth disease among cattle in several States. It has evolved into conducting nutrition research and education that help “promote optimum health and human welfare through adequate use of milk and its products....”

Dairy Research, Inc. (DRINC) The DRINC part of UDIA provided dairy product and process research and development and has been absorbed by DMI. This work continues with cooperatives, privately-owned companies, universities, and others in expanding outlets for dairy products and developing processes to improve the product and its manufacture.

National Dairy Promotion and Research Board

One provision of the Dairy and Tobacco Adjustment Act of 1983, strongly supported by dairy cooperatives, created a National Dairy Promotion and Research board. Commonly referred to as the National Dairy Board (NDB), its mission is to conduct a coordinated promotion and research program to help expand domestic and foreign markets for fluid milk and dairy products produced in the U.S. Its 36 members are dairy farmers appointed by the Secretary of Agriculture. Most were nominated by dairy cooperatives. Representation is based on the milk production of each region. The board oversees the collection and disbursement of the congressionally mandated 15 cents per hundredweight checkoff to promote the consumption of fluid milk and dairy products.

Additional Dairy Organizations

Several local and regional organizations exist that provide services to the dairy industry. Two types closely linked to the dairy industry are described below. In addition, many members of dairy cooperatives may also belong to supply cooperatives to obtain feed, seed, fertilizer and other inputs to milk production.

Artificial Insemination Cooperatives

The artificial insemination (AI) industry provides breeding

products and services for both dairy and beef cattle. AI grants dairy producers access to a wide variety of bulls, enabling producers to capitalize on the most recent genetic advances. Twenty of the 22 AI organizations were organized as producer-owned cooperatives in 1990. Cooperatives' market share has consistently exceeded 60 percent since the industry began in 1939.

Dairy Herd Improvement Associations

Dairy Herd Improvement Associations (DHIA) help farmers keep records on their cows to improve productivity. DHIA's provide individual dairy producers an economical method of obtaining information useful for improving breeding and management of dairy herds. Records of milk production and composition, feed cost, and income per cow enable the dairy farmer to cull the least profitable cows, feed according to the cow's production requirements, and select the most suitable animals for breeding. The DHIA's are all not-for-profit and/or cooperative producer organizations. In 1993, 49,017 herds were members of the 30 or so DHIA's, with over 4.7 million cows on test.

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Table 1—Number, volume and membership of dairy cooperatives, selected years¹

Year	Cooperatives	Milk Marketed	Members
	Number	Million pounds	Number
1935/36	2,270	31,058	720,000
1943/44	2,286	2	702,000
1956/57	1,746	58,038	777,240
1964	1,244	76,743	561,085
1973	592	83,227	³ 281,065
1980	435	95,634	⁴ 163,549
1987	296	105,798	⁵ 120,603
1992	265	122,622	⁵ 110,440

¹ Data reported in the *Marketing Operations of Dairy Cooperatives* may differ from numbers reported in *Statistics of Farmer Cooperatives* because of classification used and type of data collected. For example, dairy goat cooperatives were not included in the studies of marketing operations of dairy cooperatives; only active members were counted as members.

² Data not available.

³ 1972/73.

⁴ 1979.

⁵ Number of producers delivering.

Sources:

Marketing Operations of Dairy Cooperatives, Research Reports 133, 88, and FCS 38.
Statistics of Farmer Cooperatives, selected years.

Table 2—Estimated business volume of cooperatives, by type, selected years¹

Year	Type of cooperative				All marketing
	Dairy	Grain ²	Fruit/Veg.	Livestock	
<i>Million dollars</i>					
1935/36	520	360	212	250	1,586
1943/44	1,203	1,178	638	747	4,430
1956/57	2,764	1,664	723	1,174	7,999
1963/64	3,524	2,490	1,137	1,509	11,209
1972/73	6,102	5,428	2,009	2,649	19,573
1980	13,666	17,790	4,209	5,637	48,911
1987	16,548	10,059	6,114	3,158	44,156
1992	20,239	15,223	7,591	4,938	58,196
1993	20,510	16,464	8,371	5,668	60,930

¹ Includes gross business volume in 1935/36 and 1943/44. The remaining years include net business volume where business between cooperatives was excluded.

² Includes dry bean and rice cooperatives in 1935/36 and 1943/44.

Source: *Cooperative Historical Statistics* and *Farmer Cooperative Statistics*, selected years.

Table 3—Number of cooperatives, by type, selected years

Year	Type of cooperative				All marketing ²
	Dairy	Grain ¹	Fruit/Veg.	Livestock	
<i>Million dollars</i>					
1935/36	2,270	3,010	1,063	1,040	8,388
1943/44	2,286	2,311	920	642	7,522
1956/57	1,746	2,119	733	504	6,284
1963/64	1,320	1,983	617	447	5,421
1972/73	685	2,029	442	822	4,897
1980	465	1,792	379	395	3,808
1987	298	1,446	312	286	3,054
1992	265	1,243	290	95	2,218
1993	258	1,193	282	106	2,214

¹ Includes dry bean and rice cooperatives in 1935/36 and 1943/44.² Adjusted for duplication from multiple activities performed by many cooperatives.Source: *Cooperative Historical Statistics* and *Farmer Cooperative Statistics*, selected years.**Table 4—Cooperative share of milk delivered to plants and dealers, selected years**

	Milk handled by cooperatives	Total U.S. milk delivered to plants and dealers	Cooperative share of U.S. total
<i>Million pounds</i>			
1936	¹ 31,058	² 75,188	48
1957	58,038	98,378	59
1964	76,743	113,935	67
1973	83,227	109,823	76
1980	95,634	124,717	77
1987	105,798	139,082	76
1992	122,622	148,804	82

¹ Volume of market milk; includes milk sold as market cream.² 1935 volume.

Table 5—Market share of cooperative members' milk by grade, and utilization of cooperatively marketed milk, selected years

	Cooperative share of grade A milk ¹	Cooperative share of grade B milk ¹	Milk sold raw ²	Milk processed or manufactured ²	
	<i>(Percent of all milk)</i>			<i>(Percent of all milk handled by cooperatives)</i>	
1936 ³	—	—	42	58	
1973	81	55	69	31	
1980	79	57	60	40	
1987	76	57	55	45	
1992	81	62	62	38	

¹ Farmer member milk as percent of all Grade A or B milk delivered to plants and dealers.

² Milk received from all sources; including other cooperatives.

³ Estimated (using whole milk equivalents: market milk sales/total sales)

Table 6—Cooperatives distributing selected dairy products, number and market share, selected years

Year	Bulk whole milk	Packaged fluid milk	Bulk cream	Ice cream	Cottage cheese	Natural cheese	Butter	Nonfat dry milk
	No. % ¹	No. % ²	No. % ²	No. % ²	No. % ²	No. % ²	No. % ²	No. % ²
1936	3408	48	—	4814	—	57	1	14
1944	—	—	—	—	—	—	—	—
1957	735	62	—	—	—	130	4	108
1964	730	57	215	9	420	—	143	5
1973	458	63	85	12	208	—	60	5
1980	352	55	60	16	122	—	38	11
1987	251	51	34	14	70	—	21	8
1992	230	57	29	16	40	—	20	10

¹ Data not available.¹ Percent of all milk marketed by cooperatives.² Percent of total manufactured in the U.S. distributed by cooperatives.³ Bulk whole milk includes "market milk" and milk sold as market cream and butter is "creamy butter."⁴ Number handling "cream for manufacturing," (266 handled "market cream" as a "sideline" product).⁵ Estimated.

Table 7—Balance sheet of dairy cooperatives, selected years

	1993		1987		1976		1970	
	(Mill.)	(%)	(Mill.)	(%)	(Mill.)	(%)	(Mill.)	(%)
Total assets	\$4,548	100	\$3,411	100	\$1,646	100	\$1,138	100
Equity capital	\$1,736	38	\$1,339	39	\$596	36	\$521	46
Debt capital	n/a		\$706	21	\$372	23	\$233	21
Other liabilities	n/a		\$1,364	40	\$691	42	\$370	33
		(\$)		(\$)		(\$)		(\$)
Simple average equity per member	14,183		9,762		2,681		1,392	
	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
Cooperatives deducting capital retains	n/a	n/a	42	17	36	8	n/a	n/a
	(Mill.)		(Mill.)		(Mill.)		(Mill.)	
Total value of capital retains deducted	n/a		\$65		\$35		n/a	

**U.S. Department of Agriculture
Rural Business and Cooperative Development Service
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Rural Business and Cooperative Development Service (RBCDS) provides research, management, and educational assistance to cooperatives to strengthen the economic position of farmers and other rural residents. It works directly with cooperative leaders and Federal and State agencies to improve organization, leadership, and operation of cooperatives and to give guidance to further development.

The cooperative segment of RBCDS (1) helps farmers and other rural residents develop cooperatives to obtain supplies and services at lower cost and to get better prices for products they sell; (2) advises rural residents on developing existing resources through cooperative action to enhance rural living; (3) helps cooperatives improve services and operating efficiency; (4) informs members, directors, employees, and the public on how cooperatives work and benefit their members and their communities; and (5) encourages international cooperative programs. RBCDS also publishes research and educational materials and issues *Farmer Cooperatives* magazine.

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